

Attorney Docket No. 9310.28CT
In re: Goudsmit et al.
Serial No.: 09/760,085
Filed: January 12, 2001

REMARKS

Claims 16-21, 28-31, 39-41 and 43 are pending in this application. Claim 44 is amended herein to correct an inadvertent error in dependency. New claims 45-58 are added herein. Support for these amendments and new claims is found in the language of the original claims and throughout the specification, as set forth below. It is submitted that no new matter is added by these amendments and new claims and their entry and consideration are respectfully requested. In light of these amendments and new claims and the following remarks, applicants respectfully request reconsideration of the pending application and allowance of the pending claims to issue.

I. Objection to claim 43

The Office Action states that claim 43 is objected to as being dependent from canceled claim 42.

Claim 43 is amended herein to depend from claim 16, thereby mooted this objection and applicants respectfully request its withdrawal.

II. Rejection under 35 U.S.C. § 102(b)

The Office Action states that claims 16-21, 28-31, 39-41 and 43 are rejected as allegedly anticipated by Bastian et al. Specifically, although these claims were acknowledged by the Examiner and her supervisor to be allowable pursuant to a telephone interview on October 5, 2004, in which Examiner Tung, Examiner Horlick and Supervisory Examiner Benzion participated, they are now rejected on the basis that the term "consisting essentially of" is being construed as equivalent to "comprising" and are thus allegedly anticipated by Bastian et al. Specifically, the Examiner states that if it is applicants' contention that additional steps or materials in the prior art are excluded by the recitation of "consisting essentially of," applicants have "...the burden of showing that the introduction of additional steps or components would materially change the

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characteristics of applicants' invention." (citing *In re De Lajarte*, 337 F3d 870; 143 USPQ 256 (CCPA 1964) and *Ex parte Hoffman* 12 USPQ2d 1061 (Bd. Pat. App. & Inter. 1989).

Use of the phrase "consisting essentially of" in the claims

As discussed during the October 5, 2004 telephone interview, applicants direct the Examiners' attention to MPEP § 2111.03, wherein the phrase "consisting essentially of" is described as meaning that the scope of the claim is limited to the specified materials and "those that do not materially affect the basic and novel characteristics of the claimed invention." (citing *In re Hertz*). The term "consisting essentially of" occupies a middle ground between "consisting of" and "comprising." The Office Action disregards this distinction to state that "consisting essentially of" is the same as "comprising." However it is clear that the "consisting essentially of" language is intended to occupy the middle ground of limiting the scope of the claims to the specified materials and those that do not affect the basic and novel characteristics of the claimed invention.

Thus, in the context of the second liquid of the methods of this invention, this phrase is to be interpreted to mean that, in addition to the materials specifically recited in the claims, the liquid excludes alcohol groups but can include materials of this invention that do not affect the functional capabilities of the liquid to facilitate binding of nucleic acid to a solid phase. Such materials (e.g., Tris-HCl; Triton X-100; NaOH; H₂O) are described in the specification on page 7, lines 19-32.

In response to the Examiner's statement that the phrase "consisting essentially of" is being construed to mean "comprising" and that the applicants must show that the introduction of additional components would materially change the characteristics of the claimed invention, applicants direct the Examiners' attention to the Bastian et al. reference cited in this rejection. In particular, as applicants have pointed out in past responses, the invention set forth in the Bastian et al. patent and corresponding PCT publication is based on the proposal by Bastian et al. that variations in the concentration of materials containing alcohol groups in a binding solution influenced the binding characteristics of single stranded nucleic acid or double stranded nucleic acid. Applicants

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refer the Examiner to column 4, lines 17-43, of the Bastian et al patent, wherein it is stated:

FIG. 1 shows the binding of single-stranded/double-stranded nucleic acid exemplified by single-stranded RNA and double-stranded DNA. Described here is the RNA/DNA binding from a tissue lysate to a mineral support as a function of the concentration of a material containing alcohol groups (here, ethanol) and a chaotropic substance (here, GTC). Under the condition that the concentration of one of the substances, alcohol or chaotropic substance, is constant, it is found that at a high alcohol concentration and/or amount of chaotropic substance, both types of nucleic acid (RNA/DNA) are bound to the mineral support. If the concentration of one or both substances (alcohol or chaotropic substance) becomes less than a defined value, none of the nucleic acids will bind to the mineral support to any substantial extent. Surprisingly, in between, RNA and DNA will bind to the mineral support to such different extents as can be made use of for the separation of the nucleic acids. Thus, proceeding from cells, and after lysis of the cells with a high concentration of chaotropic substances, the concentrations of chaotropic substance and material containing alcohol groups can be adjusted by subsequent addition of a material containing alcohol groups or a mixture of material containing alcohol groups and water or buffer such that a selective binding of the RNA is achieved while the DNA remains in the breakthrough. In the example according to FIG. 1, concentrations of 1.75 M GTC and 30% by volume of ethanol would be selected in order to achieve a separation of RNA from DNA by fractional binding. (Emphasis added.)

Thus, the teachings of the Bastian et al. patent are clearly directed to methods of separating single stranded nucleic acid from double stranded nucleic acid by altering the concentration of alcohol. Notably, the presence of alcohol in reagents used for binding nucleic acids materially affects the basic characteristics of the methods of binding nucleic acid as proposed by Bastian et al. and therefore would affect the functional capability of the claimed liquid to facilitate binding of nucleic acid to a solid phase. Thus, the phrase "consisting essentially of" as used in the claims presented herein is technically distinct in its meaning that the second liquid employed in the methods of this invention has the basic

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and novel characteristics of consisting essentially of material selected from the group consisting of: a) a chaotropic agent; b) a chaotropic agent and a chelating agent; c) a chaotropic agent and divalent positive ions; and d) a chaotropic agent, a chelating agent and divalent positive ions, which operate in the claimed methods in isolation of reagents containing alcohol groups that would materially change the characteristics of the invention, according to the disclosure in Bastian et al.

Furthermore, applicants have demonstrated throughout the disclosure and in the Examples set forth in the instant specification that the basic and novel characteristic of the claimed invention is the successful separation of single and double stranded nucleic acid in the absence of materials containing alcohol groups. Thus, applicants have met the standard as set forth in *In re De Lajarte*, cited by the Examiner, of showing the basic and novel characteristics of the claimed invention and that the introduction of materials containing alcohol groups would materially change these characteristics. Thus, for at least these reasons, applicants submit that claims 16-21, 28-31, 39-41 and 43 are not anticipated by Bastian et al. and applicants respectfully request the withdrawal of this rejection.

III. New claims 45-58

New claim 45 recites a method for separating single stranded nucleic acid from double stranded nucleic acid, comprising the steps of: contacting a mixture comprising both single stranded and double stranded nucleic acid with a first liquid comprising a chaotropic agent and a nucleic acid binding solid phase in the absence of material containing alcohol groups, wherein the first liquid has a composition such that the double stranded nucleic acid binds to the solid phase; separating the solid phase from a supernatant containing the single stranded nucleic acid; and contacting the supernatant with a second liquid comprising a second nucleic acid binding solid phase, in the presence of material selected from the group consisting of a) a chaotropic agent; b) a chaotropic agent and a chelating agent; and c) a chaotropic agent, a chelating agent and divalent positive ions, and in the absence of material containing alcohol groups, wherein

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the second liquid has a composition such that the resulting mixture of supernatant and second liquid allows for binding of the single stranded nucleic acid to the second solid phase. New claims 46-58 depend from new claim 45, either directly or indirectly.

Applicants submit that these new claims are free of the cited art and are thus ready for allowance. In particular, as set forth above and in previous responses, the methods described in the Bastian et al. patent set forth the requirement that the reagents used to separate single stranded nucleic acid from double stranded nucleic acid present in a mixture of the two nucleic acid types include materials that contain alcohol groups. There is no enabling disclosure anywhere in the Bastian et al. patent of a method of separating single stranded nucleic acid from double stranded nucleic acid by using reagents to bind single stranded nucleic acid to a solid support wherein the reagents lack materials containing alcohol groups.

Applicants respectfully point out that the case law sets forth the standard for evaluating a disclosure for adequate written description as set forth under 35 U.S.C. § 112, first paragraph, and it very clearly states that a limitation need not be explicitly discussed in the specification in order to meet the requirements of adequate written description. In particular, as set forth in *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563 and in *Ralston Purina Co. v. Far-Mar-Co, Inc.*, 772 F.2d. 1570, 1575, the appropriate test is whether the specification reasonably conveys to a person skilled in the art that the inventor had possession of the claimed subject matter at the time the application was filed.

Thus, applicants assert that, upon application of the appropriate standard for evaluating patent claims for adequate written description, it is apparent that the claims of the present invention meet this requirement. A review of the case law reveals that the courts have consistently held that it is well established that there is no *in haec verba* requirement and that newly added claim limitations can be supported in the specification through express, implicit, or inherent disclosure. (emphasis added). (see page 1105, first column of the Guidelines for Examination of Patent Applications Under the 35 U.S.C. 112, ¶ 1, "Written Description" Requirement as published on January 5, 2001 in the

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Federal Register (Vol. 66, pages 1099-1111). (emphasis added). In particular, the Court of Customs and Patent Appeals (CCPA) has stated that "[t]he function of the description requirement is to ensure that the inventor had possession, as of the filing date of the application relied on, of the specific subject matter now claimed by him; how the specification accomplishes this is not material..... It is not necessary that the application describe the claim limitations exactly... but only so clearly that persons of ordinary skill in the art will recognize from the disclosure that applicants invented processes including those limitations." (*In re Wertheim*, 541 F.2d 257 (CCPA 1976), citing *In re Smith*, 482 F.2d 910 (CCPA 1973) and *In re Smythe*, 480 F.2d 1379 (CCPA 1973).

Furthermore, that applicants were in fact in possession of the embodiment of the invention as now claimed at the time this application was filed is apparent from a reading of the specification. Specifically, in every description of the invention set forth in applicants' disclosure, the reagents for separating single stranded and double stranded nucleic acid material are reagents that lack material containing alcohol groups. Furthermore, in each of the numerous examples provided in the specification on pages 6-17, chemicals and buffer compositions are described, every one of which lack material containing alcohol groups. Thus, it is readily and reasonably apparent to one skilled in the art that the specification demonstrates that the applicants were indeed in possession of methods of separating nucleic acids by employing liquids comprising chaotropic agents and nucleic acid binding solid phases in the absence of material containing alcohol groups.

In the present application, applicants previously presented claims to methods for separating single stranded nucleic acid from double stranded nucleic acid, comprising the steps of contacting a mixture comprising both single stranded nucleic acid and double stranded nucleic acid with a first liquid comprising a chaotropic agent and a nucleic acid binding solid phase, wherein the first liquid has a composition such that the double stranded nucleic acid binds to the solid phase; separating the solid phase from a supernatant containing the single stranded nucleic acid; and contacting the supernatant with a second liquid comprising a second nucleic acid binding solid phase, wherein the

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second liquid has a composition such that the resulting mixture of supernatant and second liquid allows for binding of the single stranded nucleic acid to the second solid phase. This earlier claim language contained no limitation that the steps of this method be carried out in the absence of material containing alcohol groups and thus was broader in scope than the invention presently claimed. This broader embodiment of applicants' invention meets the written description requirement, because, *inter alia*, these claims were not rejected under 35 U.S.C. § 112, first paragraph, in any previous Office Action.

Applicants are entitled to claim as their invention a more particular (narrower) embodiment of the broader invention than they have explicitly described in the specification. Applicants also wish to point out that in the present application, the inclusion of the limitation at issue does not present a different invention than what was claimed previously, it merely narrows the scope of the same invention. Also, as stated above, the specification contains several examples of members of the subgenus of methods presently claimed with the limitation at issue, which are clearly recognized to be part of the invention as previously claimed and adequately described in the specification.

The case most closely in line with the facts of the present application is *Ex parte Parks* (30 USPQ2d 1234), which is an opinion of the USPTO Board of Patent Appeals and Interferences. In *Parks*, claims were rejected under 35 U.S.C. § 112, first paragraph, for inadequate written description due to an amendment of the claims to include the recitation of the phrase "in the absence of a catalyst," which the Examiner alleged was a limitation that added new matter because this phrase lacked literal basis in the specification. In its analysis, the Board cited several cases in support of the position that the observation of a lack of literal support does not, in and of itself, establish a *prima facie* case for a written description rejection.

The Board then cited *In re Anderson* as holding that "...it is sufficient if the originally-filed disclosure would have conveyed to one having ordinary skill in the art that an appellant had possession of the concept of what is claimed. (emphasis added). The Board ultimately determined that the written description rejection was improper on the basis of the following analysis.

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In the situation before us, it cannot be said that the originally-filed disclosure would not have conveyed to one having ordinary skill in the art that appellants were in possession of the *concept* of conducting the decomposition step generating nitric acid in the absence of a catalyst. See, for example, column 5 of the '562 patent, first paragraph, wherein FIG. 4 is discussed. Pyrolysis temperatures of between 600°C and 700°C, and above 700°C were employed to achieve conversion of chemically bound nitrogen to nitric oxide. Smooth conversion was obtained above 700°C, while the optimum conversion was found to occur above 900°C. Throughout the discussion which would seem to cry out for a catalyst if one were used, no mention is made of a catalyst. (emphasis in the original).

Like the teachings of the specification at issue in *Ex parte Parks*, in which examples are provided that make no mention of a catalyst, the examples in the instant specification set forth the steps of the claimed methods with no mention of including materials containing alcohol groups. Thus, by applying the same reasoning as set forth by the Board in *Ex parte Parks*, applicants submit that it cannot be said that the instant specification as filed would not reasonably convey to one of ordinary skill in the art that applicants are in possession of the concept of the claimed methods including the limitation at issue and that on this basis, the written description requirement of 35 U.S.C. § 112, first paragraph, has been met.

Furthermore, as set forth by the Board in *Ex parte Parks* and summarized herein, the mere observation of a lack of literal support does not, in and of itself, establish a *prima facie* case for a written description rejection. Specifically, it is clearly inconsistent with the case law that defines the standard for written description to reject a claim that recites a negative limitation excluding an element on the basis that the absence of a positive recitation of that element does not provide support for excluding it.

As an additional point, applicants respectfully point out that it is stated in the Guidelines for Examination of Patent Applications Under the 35 U.S.C. 112, ¶ 1, "Written Description" Requirement as published on January 5, 2001 in the Federal Register (Vol. 66, pages 1099-1111) that "[w]hile there is no *in haec verba* requirement,

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newly added claim limitations must be supported in the specification through express, implicit, or inherent disclosure." (page 1105, first column). Thus, the written description requirement can properly be met by implicit disclosure of what an invention is not on the basis of the description of what the invention is and it would be clear to one skilled in the art that the present applicants were in possession of the invention as now claimed, i.e., a method for isolating single stranded nucleic acid and double stranded nucleic acid in a mixture by using binding reagents that contain no materials with alcohol groups. Thus it is clear that the standard for written description is met by the disclosure of the specification as filed.

In particular and as noted above, support for new claim 45 and claims dependent therefrom can be found in the language of the original claims as set forth in previous responses in this application and in the teachings of the specification. Specifically, the limitation that the double stranded nucleic acids in the mixture are contacted with a liquid in the absence of material containing alcohol groups and that the single stranded nucleic acids in the supernatant are contacted with a second liquid in the absence of material containing alcohol groups is supported in the teachings throughout the instant specification of a method for separating single stranded nucleic acids and double stranded nucleic acids in a mixture which describes the use of reagents that are not composed of material containing alcohol groups and there is no mention in the specification that material containing alcohol groups could or should be used. Thus, this limitation finds at least implicit support in the specification based on the teachings of what the claimed invention is and therefore, also implicitly, what the invention is not.

Thus, in posing the question of whether one of ordinary skill in the art would reasonably conclude, upon reading the specification of the present application, that the applicants were in possession of methods of separating single and double stranded nucleic acids by employing reagents which lack alcohol groups, applicants respectfully submit that it must be concluded that the only reasonable answer to this question is yes. Stated in another way, applicants submit that it cannot be concluded, and it is improper to infer, upon review of the teachings of the instant specification, that applicants did not

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possess methods of separating single and double stranded nucleic acids by employing reagents that lack alcohol groups when the application as filed clearly describes the use of reagents that lack alcohol groups.

For at least the reasons presented above, applicants have demonstrated that they have met the requirements of adequate written description for the invention as presently claimed and assert that no new matter is added by the limitations recited in the pending claims. For at least these reasons, applicants respectfully request the withdrawal of this rejection and allowance of the pending claims to issue.

Applicants also point out that in accordance with MPEP § 2163.04, entitled "Burden on the examiner with regard to the written description requirement," the Examiner bears "...the initial burden of presenting by a preponderance of the evidence why a person skilled in the art would not recognize in an applicant's disclosure a description of the invention defined by the claims." Specifically, this section of the MPEP states that the Examiner must establish a *prima facie* case by providing reasons supported by express findings of fact as to why one skilled in the art would not recognize that the inventor was in possession of the claimed invention in view of the disclosure of the application.

Thus, if the Examiner rejects new claims 45-58 as lacking adequate written description, applicants request that such required evidence be presented so that this burden is met and applicants can properly respond to and rebut such evidence.

For the foregoing reasons, applicants believe that all of the pending rejections have been adequately addressed and that the claims as presented are in condition for allowance. The Examiner is encouraged to contact the undersigned directly if such contact will expedite the examination and allowance of the pending claims.

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The Commissioner is authorized to charge Deposit Account No. 50-0220 in the amount of \$120 as the fee for a one-month extension of time. This amount is believed to be correct. However, the Commissioner is authorized to charge any deficiency or credit any overpayment to Deposit Account No. 50-0220.

Respectfully submitted,



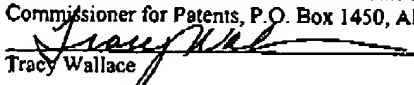
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CERTIFICATE OF FACSIMILE TRANSMISSION

Date of Deposit: February 28, 2006

I hereby certify that this correspondence is being facsimile transmitted to the U.S. Patent and Trademark Office to 571-273-8300 under 37 CFR 1.8 on the date indicated above and is addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.



Tracy Wallace